

Smart irrigation



iSii aqua compact installation manual

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Contents

1	QUICK START.....	7
1.1	STEP 1 REQUIREMENTS.....	7
1.2	STEP 2 PREPARATION	8
1.2.1	Connect the hardware.....	8
1.3	STEP 3 ACTIVATION.....	13
1.4	STEP 4 CONFIGURATION.....	14
1.4.1	What is configured?	14
1.5	QUICK START CONCLUSION.....	15
1.5.1	Note when operating	15
2	AFTER ACTIVATION CHECK.....	17
2.1	CHECK CONTROL INSTANCES.....	17
2.1.1	How to rename control instances	18
2.1.2	More information control instances.....	18
2.1.3	Need more control instances?.....	18
2.2	CHECK IO HARDWARE CONFIGURATION	18
2.2.1	Step 1: Go to the 'Manage' tab and select 'Open IO Configuration page'	18
2.2.2	Step 2: Configure your iSii aqua compact hardware.....	20
2.2.3	Optional: weather station	20
2.3	I/O CONNECTIONS	21
2.3.1	View connections.....	21
2.3.2	Add or change connections	21
2.3.3	Check connections	22
2.4	CONNECT CONTROLS	25
2.4.1	Controls to connect	25
2.4.2	Connect Irrigation Valve to an Irrigation Pump	26
2.4.3	Filtered view of the connection page	27
2.5	SET TIME AND TIME ZONE	28
2.6	AFTER ACTIVATION CHECK CONCLUSION	29
3	CONNECT HARDWARE.....	31
4	I/O WORKBENCH.....	33
4.1	SENSOR PRESET.....	33
4.2	OFFSET AND CONVERSION MATRIX	34
4.3	GRAPH SELECTED IO	34
4.4	IO WORKBENCH CONCLUSION.....	34
5	BACKUP AND RESTORE	35
5.1	BACKUP.....	35
5.2	RESTORE.....	36

6	MANAGE.....	37
6.1	OPTIONS MANAGE TAB.....	37
6.2	CONTROL INSTANCES	38
6.2.1	<i>How to add control instances.....</i>	38
6.2.2	<i>How to remove control instances.....</i>	39
6.3	CONFIGURE NETWORK	39
6.4	UPDATE PAGE.....	43
6.5	IMPORT NEW LICENSE	44
6.5.1	<i>Step 1.....</i>	44
6.5.2	<i>Step 2.....</i>	44
6.5.3	<i>Step 3.....</i>	44
7	HOW TO COMMISSION CONTROLS	45
7.1	HOW TO COMMISSION AN EC CONTROL.....	45
7.1.1	<i>I/O: inputs (Ain)</i>	46
7.1.2	<i>I/O: Digital outputs (Dout)</i>	46
7.1.3	<i>I-action calculation</i>	47
7.1.4	<i>I-action realization</i>	47
7.1.5	<i>Modulating system.....</i>	47
7.1.6	<i>Modulating on-off system.....</i>	47
7.2	HOW TO COMMISSION THE FERTILIZER RATIO CONTROL	48
7.2.1	<i>Adding Fertilizer Ratio control(s).....</i>	48
7.2.2	<i>Connecting Fertilizer Ratio control(s).....</i>	48
7.2.3	<i>Connecting Fertilizer Ratio control(s).....</i>	49
7.2.4	<i>Coupling Fertilizer Ratio to IO channel.....</i>	49
7.2.5	<i>IO: inputs (Ain).....</i>	49
7.2.6	<i>I/O: Digital outputs (Dout)</i>	50
7.3	WEATHER STATION - OPTIONAL	50
7.3.1	<i>Weather station package</i>	51
7.3.2	<i>Step by step installation</i>	54
7.3.3	<i>Set up the control</i>	57
8	SYSTEM LAY-OUT	61
9	NETWORK ARCHITECTURE	63
10	GREENPOINT TERMINAL LAYOUT (BASIC VERSION)	65
11	APPENDIX 1	67
11.1	EXTENDED VERSION	67
12	APPENDIX 2	69
12.1	COUNTER INPUTS HA1512.....	69
12.2	ANALOG INPUTS_4-20MA HA3454	69
12.3	ANALOG INPUTS 0-20MA HA3444.....	71

12.4	ANALOG INPUTS 0-10V HA3464	72
12.5	ANALOG OUTPUTS 0-20MA HA4012	73
12.6	UNIVERSAL AC/DC (HA9190)	74
12.7	DIGITAL OUTPUTS MOSFET HA2784	75
12.8	VALVES	76
12.9	M950	76
12.10	EXTENSION KIT	78
12.10.1	HA9020	78
12.10.2	HA9050	79
12.11	WEATHER STATION - DIAGRAM OF CONNECTIONS	80
12.11.1	Connection supplied cable	81
12.11.2	Extending connection cable	81
12.11.3	USB connection cable	81

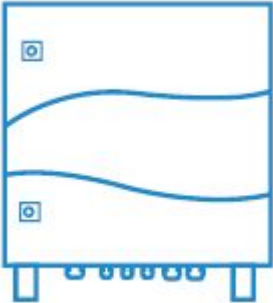
1 Quick Start

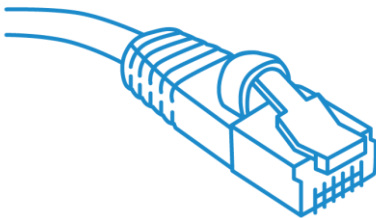
The iSii aqua compact is a plug & play system. This means that a great part of the installation, the software part, of the system is done automatically.

Get started and follow the next 4 steps!

1.1 Step 1 Requirements

Before you start, check if all items in the list below is present. Some items (*) you need to purchase yourself.

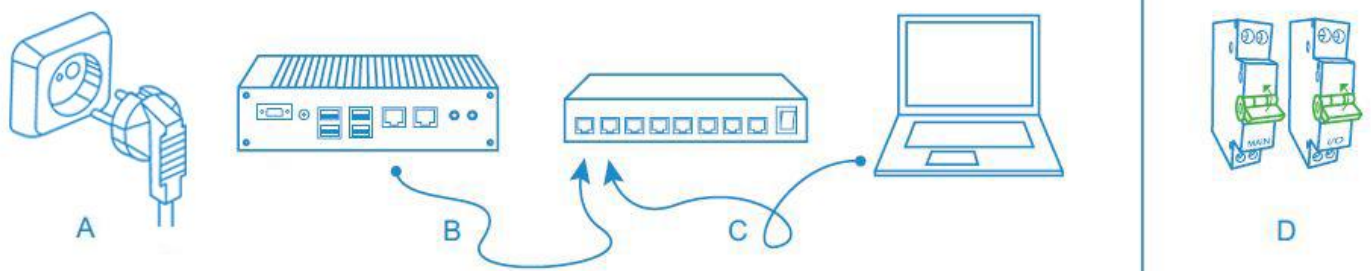
	iSii aqua compact
	Greenbox <i>The actual computer inside the iSii aqua compact.</i>
	Power outlet
	Switch *

	Laptop *
	WiFi *
	Network cables *
	Login information (send by mail)
	MAC address (will appear once you've logged in)
	Activation File (send by mail)

1.2 Step 2 Preparation

1.2.1 Connect the hardware

It's now time to connect the hardware to each other.



A. Insert the plug into the outlet

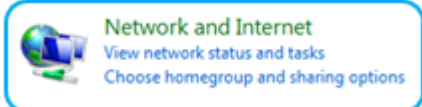
B. Connect the greenbox to the switch with a network cable

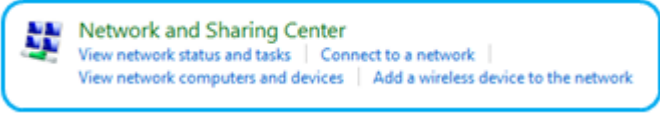
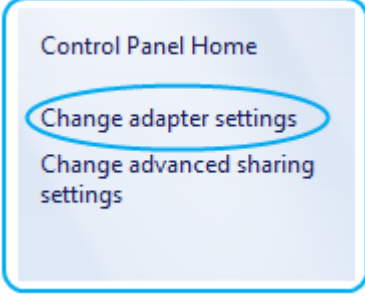
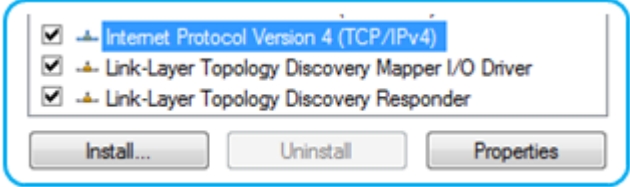
Use LAN1 of the greenbox

C. Connect your laptop to the same switch with a network cable

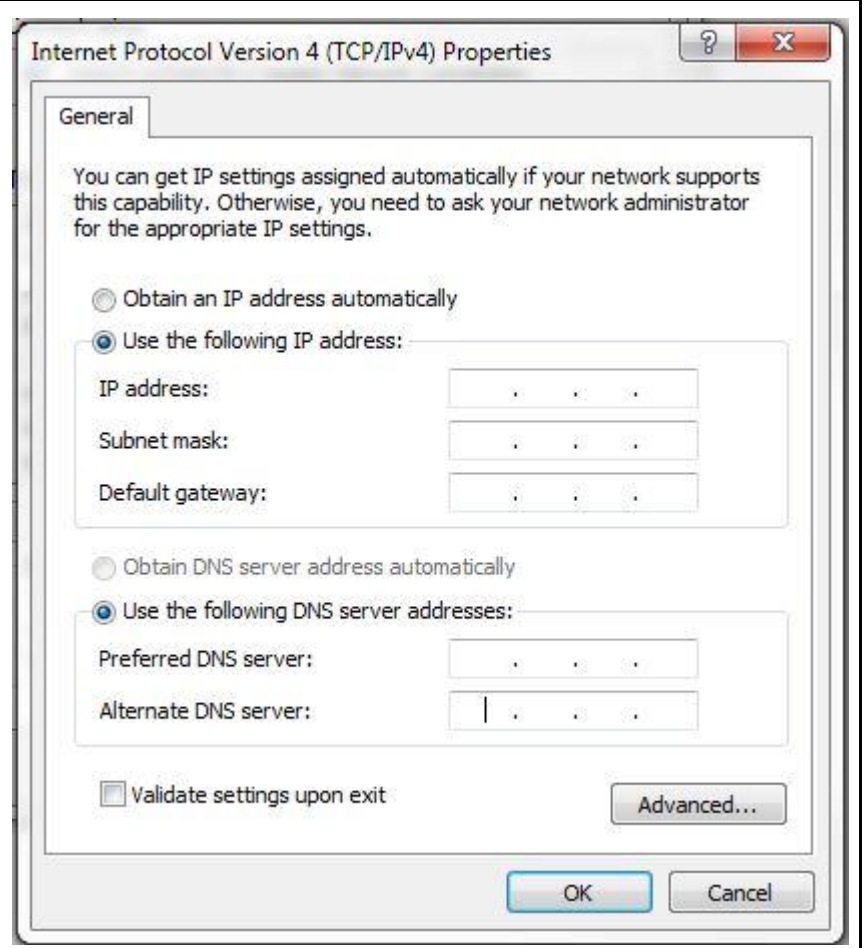
D. Switch the power of the greenbox on by switching the 'Main' and 'IO' module upwards on the poweroutlet.

1.2.1.1 How to change network settings step by step

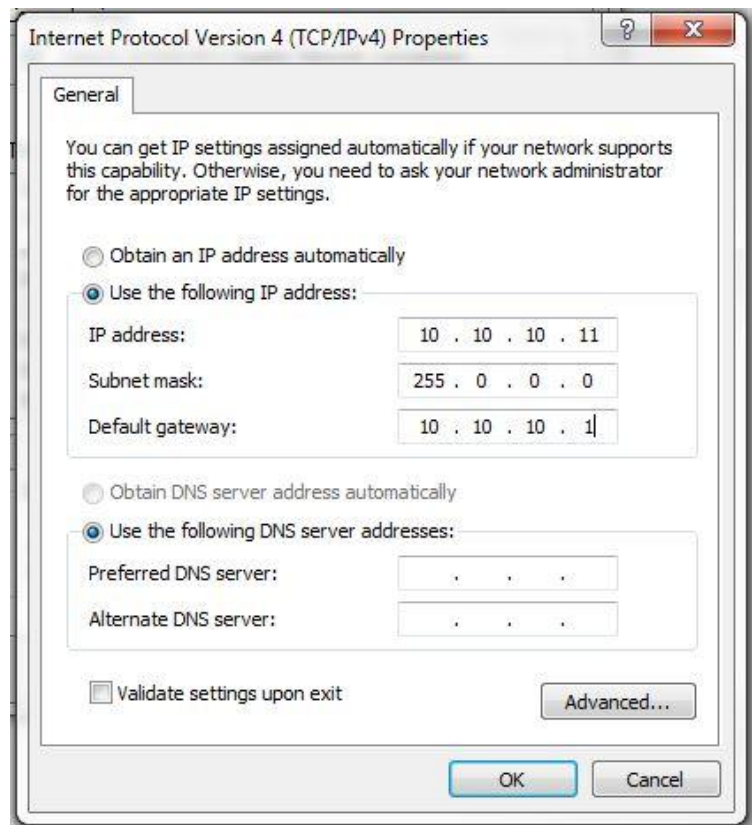
A.Go to your Control Panel via the 'windows' button	
B. Go to 'Network and Internet'	

C. Go to 'Network and Sharing Center'	
D. Select in the left menu 'Change adapter settings'	
E. Right-click on the connection you want to use and select 'Properties'	
F. Click on 'Internet Protocol Version 4 (TCP/IPv4)' and select 'Properties'	

G. Before you change the network settings, write down the original settings so in the end the laptop can be changed back into its original settings.



H. Now you can change your network settings!



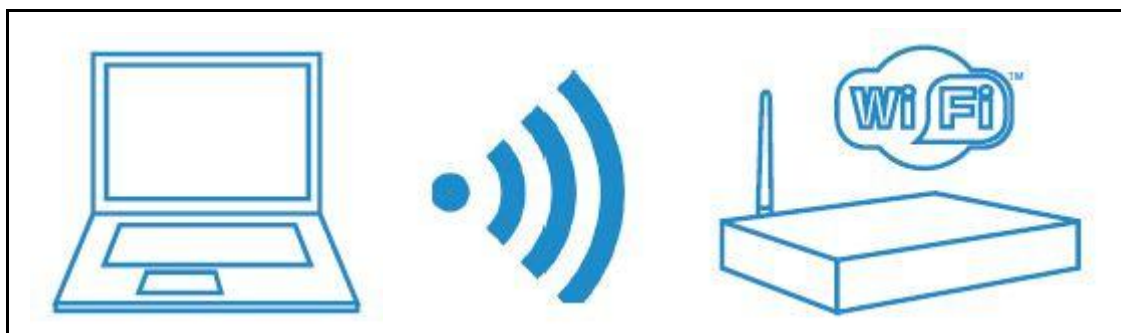
Set up communication between the laptop and greenbox

In order to connect the laptop with the greenbox, you need to temporary change the network settings of the LAN connection of your laptop.

Your laptop needs to be in the same IP address range as the Greenbox. The IP address of the greenbox is by default 10.10.10.10. The IP address of your laptop therefore need to be 10.10.10.11.

1.2.1.2

1.2.1.3 Optional: Connect your laptop to a WiFi network

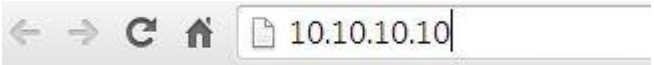


**NOTE!**

If you don't have a WiFi network you could use a USB device to download and save the activation file and insert it into your laptop.

1.3 Step 3 Activation

When the hardware is connected, it's time to activate your greenbox and make it ready to operate. Follow the next steps to do so.

A. Go to your internet browser. Note: To get the most out of the system, it's best to use Google Chrome.	
B. Go to the activation page	
<i>Wait for 60 seconds</i>	
C. Login Your login information was send to you by email. If you haven't received it, please contact us via helpdesk@hoogendoorn.nl. <i>Note that our helpdesk is only available from Monday to Friday 8:00 am - 5:00 pm (UTC +1)</i>	

D. Once logged in, the activation page will appear with the MAC address. Email the MAC address to helpdesk@hoogendoorn.nl <i>Note that our helpdesk is only available from Monday to Friday 8:00 am - 5:00 pm (UTC +1)</i>	
E. Hoogendoorn will email you the activation file. Open your email, download the file and save it to a folder you can easily find.	
F. Login and open the activation page and click on 'choose file'. Go to the folder where you saved the activation file. Select 'submit'.	
<i>Wait for 5 minutes while the configuration takes place.</i>	

1.4 Step 4 Configuration

After 5 minutes the home screen will appear and the configuration is automatically done!

1.4.1 What is configured?

-  Activating system
-  Controls added
-  IO modules added
-  Connection of controls to IO modules



Connection between controls

1.5 Quick Start Conclusion

When the automatic configuration is done, you can take the followings steps:

- **[recommended]** Check the configuration > Chapter "[After activation check](#)"
- Connect the hardware > Chapter "[Connect hardware](#)"
- Backup your system > Chapter "[Backup and restore](#)"

1.5.1 Note when operating

Note that when setting parameter values, the correct separation characters are used.

For example

Use the ":" when you need to insert time as "h:m:s".

alarm: delay time flow alarm



 h:m:s

1.5.1.1 Editing values

- Values with a "pencil" button are editable by users.

alarm: delay time flow alarm

00:10:00

h:m:s

- When the "pencil" button is pressed a user is able to change the setting value. After clicking the green button the edited value is saved.

alarm: delay time flow alarm



 h:m:s

The content of the page is refreshed every second. Setting values that are in edit mode are not refreshed.

The parameters of all control pages are sorted in alphabetical order.



All actions described in this document can only be done when you are logged in as "AquaService".

2 After activation check

The configuration is done automatically when you have followed the steps in chapter "Quick Start". It is recommended to check the system after the activation.

2.1 Check control instances

Click on the icon or scan the QR code to view the supporting video



Browse to the 'Manage' page and click on 'Open control instances page', a page opens that looks like the image below. The upper part of the page is meant for adding new control instances. The lower part offers a survey of all current control instances.

On this page you can check if all control instances are connected.

The screenshot shows a web interface for managing control instances. At the top left is a 'Home' link. The main area is divided into two sections. The upper section, titled 'add', contains a form for creating new instances with fields for 'control name' (Gr {0}), 'control type' (Alarm Registration), 'start number' (1), 'interval' (1), and 'count' (1). Below these fields are 'rename selected' and 'add' buttons. The lower section, titled 'controls', displays a table of existing instances. The table has three columns: 'Instance name', 'Instance id', and 'Control type id'. It lists three instances: EC, pH, and Water. A 'delete' button is located at the bottom right of the table.

Instance name	Instance id	Control type id
EC	dfbc8440-576b-4441-a6df-fe477c56803a	EC Control
pH	e58ec2d6-14d7-4e31-afef-46f9441099e8	pH Control
Water	95cee156-5c8d-4cb5-b18b-51c5692fee6b	Irrigation Strategy

2.1.1 How to rename control instances

Instance name	Instance id	Control type id
Aspirator 2	540f4a31-6224-4240-93f4-5dc5b1cc7a19	Aspirator
Cooling 2	47c2144d-98f1-49ba-8997-75b5f7729b91	Pad and Fan Cooling

1. In the report of existing control instances (lower part of the screen), select the control instance you want to rename by clicking on it; (1)
2. In the box with the 'control name' write the new instance name; (2)
3. Click on the 'rename selected' button. (3)

2.1.2 More information control instances

More information on how to add and remove control instances, go to Paragraph "Control instances".

2.1.3 Need more control instances?

Contact your dealer when you want or need more control instances. You will receive a new license which you can import into your system. See also paragraph "Import new license".

2.2 Check IO hardware configuration

It's necessary to check if the IO Hardware configuration is in sync with the hardware inside the greenbox. Just follow the next steps to do so.

2.2.1 Step 1: Go to the 'Manage' tab and select 'Open IO Configuration page'.

Manage

Stop and restart all controls

System time:



 6/28/2013 4:34:14 PM

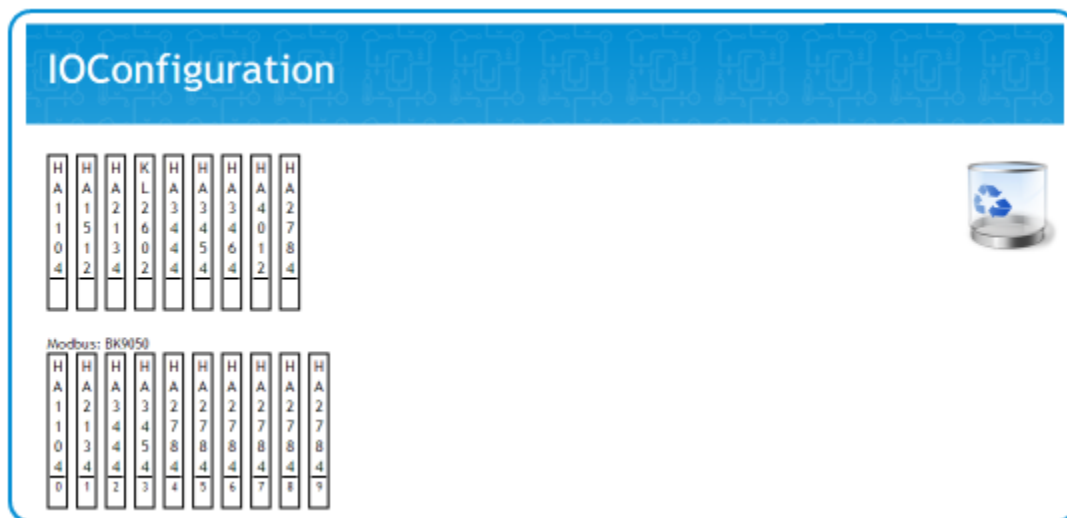
Open update page

Open IO Configuration page

The page shown below opens. The upper modules are an overview of inactive modules. The modules below that are active in your iSii aqua compact.

2.2.2 Step 2: Configure your iSii aqua compact hardware

You can configure every Greenpoint module to make it in sync with the actual hardware in the greenbox by selecting them and dragging them in the area (active or inactive modules) and position you wish. You can also delete a module by selecting them and dragging it into the bin.



Note!

- Software and hardware must be in sync
- Switch off the IO power switch to (de)install IO modules.

2.2.3 Optional: weather station

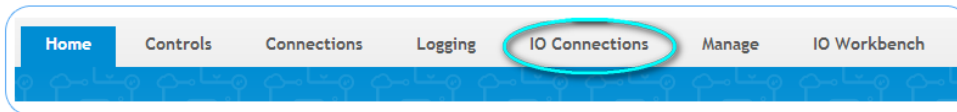
You can also add the weather station compact to your system. How to set up this control you can find in paragraph "weather station", the setup of the hardware you can find in paragraph "[weather station - diagram of connections](#)".

When you purchase the weather station later, you will receive a new license. You can find how to import the new license in paragraph "[import new license](#)".

2.3 I/O Connections

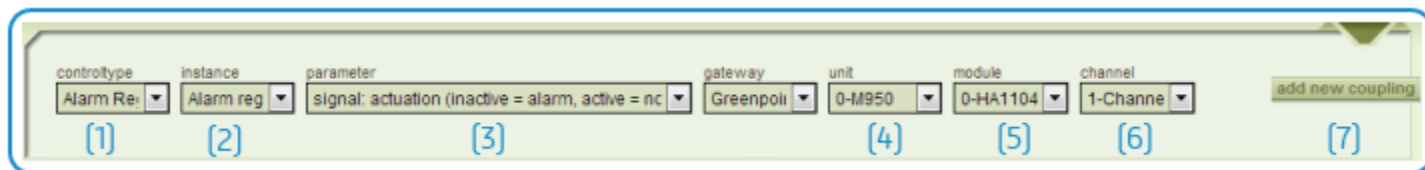
Introduction

When you are logged in you can view the I/O Connections tab. Here you can view, check and change the connections of the control parameters to physical IO hardware addresses.



2.3.1 View connections

Click on the 'I/O connections' tab in order to check the inputs and outputs.



1. Control type
2. Control instance
3. Parameter
4. Greenpoint unit
5. Greenpoint module
6. Module Channel number
7. Add coupling

On this page you can check the entire list of connections.

2.3.2 Add or change connections

You can add a connection by selecting the control type (1) and select the module (5) and right channel. Click on 'add new coupling' to add the new connection.

If you want to remove a connection, click on the delete button behind the connection.

controltype	instance	parameter	gateway	unit	module	channel	
ph control	ph	pump ph control: measurement	greenpoint	0-m950	3-ha3454	1-channel 1	delete
ph control	ph	pump ph monitor: measurement	greenpoint	0-m950	3-ha3454	2-channel 2	delete

2.3.3 Check connections

When a connection is added, you can check if the connection is working by making the connection active. Follow the next steps to check your newly added connection.

2.3.3.1 Step 1: Add or change your connection (view paragraph before)

For example

irrigation pump	unit 1	watering pump 1: actuation pump on	greenpoint	0-m950	4-ha2784	2-channel 2	delete
-----------------	--------	------------------------------------	------------	--------	----------	-------------	------------------------

2.3.3.2 Step 2: Go to IO Workbench and select the IO module and channel of the connection

The screenshot shows the 'Channel selection' window in the IO Workbench. It contains several sections: 'Channel selection' with dropdowns for 'Greenpoint', 'M950', 'HA2784' (labeled [1]), and 'Channel 2' (labeled [2]); 'Sensor coupling' with a dropdown and green/red buttons; 'Manual override' with a checked checkbox (labeled [3]); 'Nett/Gross value conversion' with 'Active' selected, a value of '1' (labeled [4]), and a green button; and 'Coupled parameters' with the text 'Irrigation Pump, Unit 1, watering pump 1: actuation pump on' (labeled [5]).

1. Click on the fourth IO module, HA2784 (see step 1: "4 - ha2784").

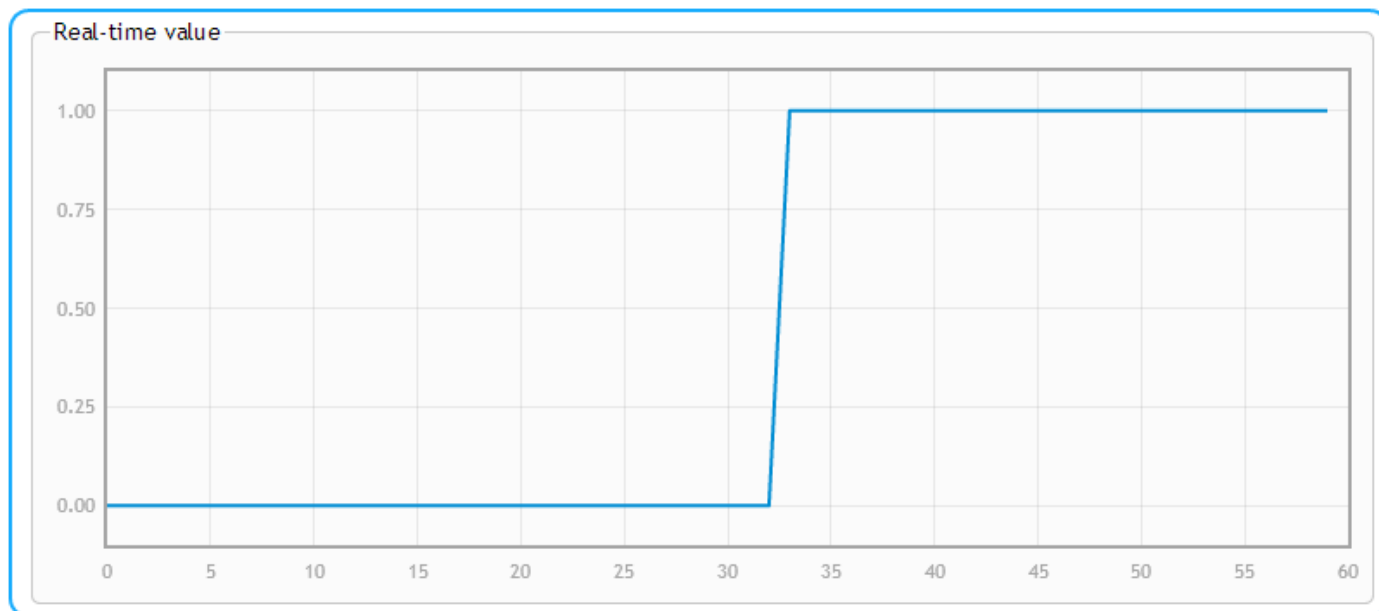


Note

In the programming language you start counting at 0. So when it says for example "4 - ha2784", you need to pick the 5th connection counting down from the top!

1. Select 'Channel 2' (see step 1: "2 - channel 2")
2. Select 'Manual override'
3. Click on 'Active' and select the green button to activate.
4. At the 'Coupled parameters' you can check if the parameters are the same as the connection you wanted to select. As you can see it has the same parameters as selected at step 1.

2.3.3.3 Step 3: Check the graph



2.3.3.4 Step 4: Check the hardware in your iSii aqua compact

Is the light on of the IO module you have connected?



2.4 Connect Controls

Introduction

You need to connect several controls to each other so that they will work together. For example, the most important condition for irrigation is that the Irrigation Vales are connected to an Irrigation pump. Which connections you need to have or make and how to do that will be explained in this chapter.

2.4.1 Controls to connect

The following connections need to be made for the best operation of your iSii aqua compact.

2.4.1.1 Irrigation

Irrigation valve	→	Pump control
Pump control	→	EC control
Pump control	→	pH control
Irrigation valve	→	Irrigation Strategy
Irrigation valve	→	Drain pit
Fertilizer Ratio	→	Pump control

2.4.1.2 Climate

Ventilation Control	→	Aspirator Meteo
Meteo	→	Compact weather station
Solar optimizer	→	Clock and astronomy
Wind optimizer	→	Meteo
Ventilation, Heating, Cooling	→	Climate control

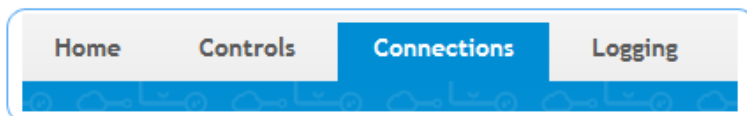


2.4.2 Connect Irrigation Valve to an Irrigation Pump

Click on the icon or scan the QR code to view the supporting video



Go to the 'Connections' tab.



Like we pointed out in the introduction, the most important condition for irrigation is the connection between the Irrigation Valves and an Irrigation Pump. In the 'Connections' tab, the Irrigation Valves can be connected to the Irrigation Pumps. When the iSii aqua compact is installed you have given the valves and pumps a name and number, in our example they are given numbers.

In the screen above there are four selection fields:

1. Control type, e.g. Irrigation Valve;
2. The specific control instance, e.g. Valve '8';
3. The control type to connect to a valve, in this case the Irrigation Pump;
4. The specific control instance, e.g. Pump '1'.



When the correct values are selected in the four selection fields, the 'add' button can be pressed. After this event a new connection appears in the table, as seen in the example in 'View, change and check connections'.

NOTE



- In the next paragraph '[Filtered view of the connection page](#)' you can find how to filter the view.
- If the valve was already connected to another pump, the current connection is replaced by the new one.
- Before connecting different valves to pumps, wait until all active irrigation cycles are stopped.

2.4.3 Filtered view of the connection page

Coupling selection

SOURCE

Clock and Astronomy

Location

DESTINATION

Weather station comp

Weather Station

Filter ☒

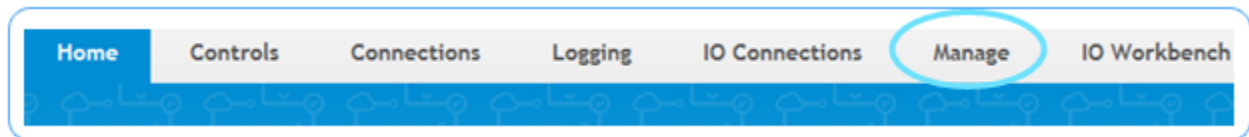


Source type	Source instance	Coupled type	Coupled instance
Meteo	Meteo	Weather station compact	Weather Station

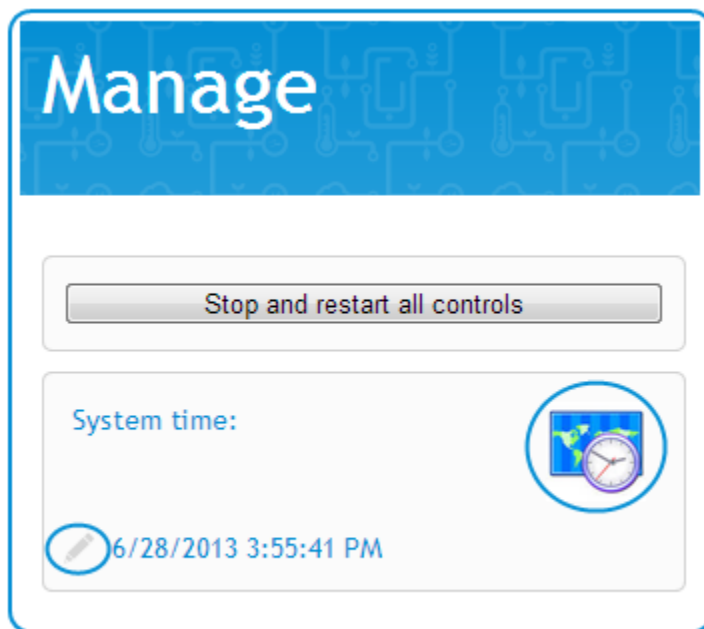
Select the checkbox 'Filter' to filter the view of the connection page, the filter is based on the 'Coupled instance'.

2.5 Set time and time zone

To set your time and time zone, go to the 'Manage' tab.



You can set the time by clicking on the pencil on the left side of the date.



If you want to set the time zone you can click on the icon.



This opens the settings page as shown below. Open the pull down menu for time zones to select the time zone the iSii aqua compact is in. Once you have selected the correct time zone, click on 'change' to save it.

The screenshot shows a web-based configuration interface for the iSii aqua compact. It features two tabs: 'date & time' and 'time zone'. The 'date & time' tab is currently selected, displaying the current date as 'Friday, June 28, 2013' and the current time as '4:06:18 PM'. Below this, the current time zone is set to '(GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna'. The 'time zone' tab is also visible, showing an option to 'adjust date time' which is checked, the 'current server' IP address '10.30.11.1', and a list of 'available time zones' with a dropdown arrow. At the bottom right of the interface are two buttons: 'change' and 'cancel'.

When you are done, you need to click the button 'Stop and restart all controls'.

The iSii aqua compact is now ready to use!

2.6 After activation check conclusion

When you have taken every part of the configuration, you can take the followings steps:

- **[recommended]** Check the configuration > Chapter "[After Activation Check](#)"
- Connect the hardware > Chapter "[Connect hardware](#)"
- Commission controls > Chapter "[How to commission controls](#)"
- Backup your system > Chapter "[Backup and restore](#)"

3 Connect hardware

When you have taken every step in chapters 1 to 3, it is time to connect the inputs and outputs modules to sensors and relais.

What to do:

- What and how to do this you can find in Appendix II.
- After connecting a sensor to an input channel you need to set up the conversion and calibrate. View chapter "[IO Workbench](#)" on how to do this.

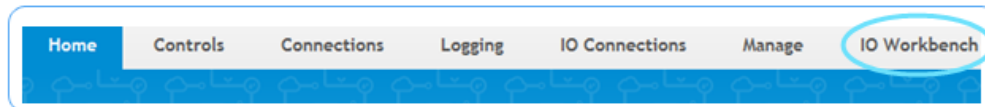
4 I/O Workbench

Click on the icon or scan the QR code to view the supporting video



Introduction

Go to the I/O Workbench tab to calibrate different devices of the iSii aqua compact, such as sensors. You need to be logged in as a distributor to view this tab.



4.1 Sensor preset



4.2 Offset and conversion matrix

GROSS VALUE CONVERSION MATRIX OFFSET NETT VALUE

3424 2048 0 0 65.80

28186 1250

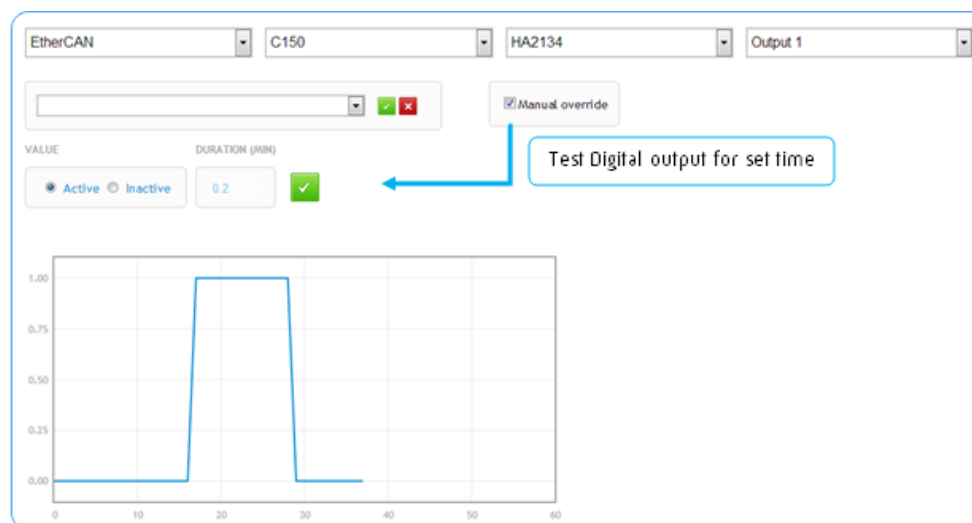
CONVERSION MATRIX

2048 0

28186 1250

Edit conversion matrix

4.3 Graph selected IO



4.4 IO Workbench conclusion

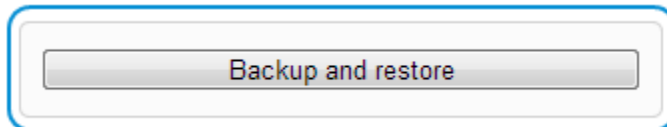
When you have calibrated all IO hardware you can continue with one of the next chapters.

- Commission controls > Chapter "[How to commission controls](#)"
- **[recommendation]** Make a backup of your system > Chapter "[Backup and restore](#)"
- If you want to start operating the system, go to the user manual.

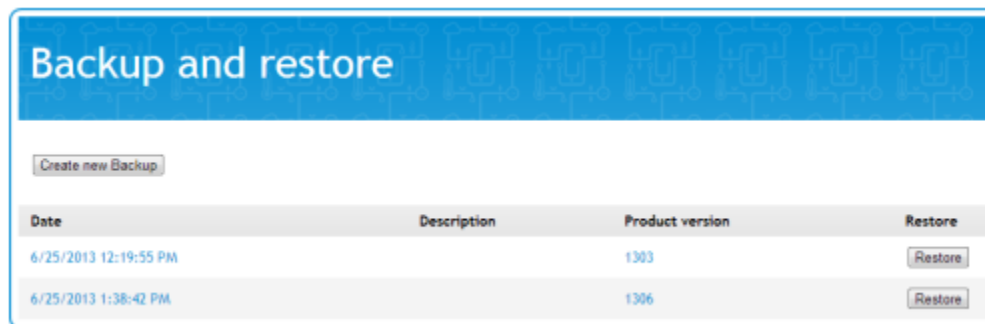
5 Backup and restore

When you are on the Manage page, you can backup and restore backups to your iSii aqua compact.

Click on the 'Backup and restore' button.



The page below opens.



5.1 Backup

Click on 'Create new Backup' to make a backup of your system. The new backup will appear in your list of backups.



Note! You can not create more than 2 backups.

[Create new Backup](#) You can not create more backups when you already have more then two saved. Please delete backups you no longer need before creating a new one.

5.2 Restore

To restore a backup you can click on the 'Restore' button of the backup you want to restore. You don't have to pick the last backup, you can also choose an older backup.



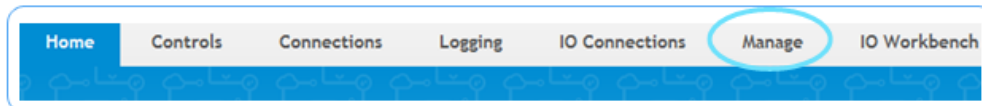
Note

- When in doubt, please contact the helpdesk.
- Restoring may take several minutes

6 Manage

Introduction

At the 'manage' page you can view and change the system time, stop and restart all controls and update the iSii aqua compact.



6.1 Options Manage tab

Manage

Stop and restart all controls

System time:


6/29/2013 9:57:19 AM

Open update page

Open IO Configuration page

Backup and restore

Open control instances page

Configure network

License:

Choose File

No file chosen

Import

Stop and restart all controls
Only to be used in case of extreme emergency.

System time
To set the correct time and time zone manually, can be used if internet is not available.

Open update page
A link to the update page, can be used for updates via usb stick.

Open IO Configuration page
To configure the I/O hardware.

Backup and restore
It's possible to make back-ups of your system and restore backups when needed.

Open control instances page
A link to the page where you can add and remove control instances.

Configure network
Here you can configure your network, such as your IP address.

Import license
When you have bought an extension or add-on for your system you will get an new license which you can import here.

6.2 Control instances

Introduction

After you have clicked on 'Open control instances page', a page opens that looks like the image below. The upper part of the page is meant for adding new control instances. The lower part offers a survey of all current control instances.

The screenshot shows a web interface for managing control instances. At the top left is a 'Home' link. The main form is titled 'add' and contains the following fields:

- control name:** A text input field with the value 'Gr {0}'.
- control type:** A dropdown menu with 'Alarm Registration' selected.
- start number:** A text input field with the value '1'.
- interval:** A text input field with the value '1'.
- count:** A text input field with the value '1'.

Below the form are two buttons: 'rename selected' and 'add'.

Below the form is a table titled 'controls' showing existing instances:

Instance name	Instance id	Control type id
EC	dfbc8440-576b-4441-a6df-fe477c56803a	EC Control
pH	e58ec2d6-14d7-4e31-afef-46f9441099e8	pH Control
Water	95cee156-5c8d-4cb5-b18b-51c5692fee6b	Irrigation Strategy

At the bottom right of the table is a 'delete' button.

6.2.1 How to add control instances

Set the following selection and input fields correctly.

- **Selection field 'control type'**
Select the control type of which you want to add instances.
- **Input field 'control name'**
It is optional to change the text 'Gr' to a more relevant text. If you want to add Irrigation valves, for example, you could enter 'valve {0}'. This would lead to new instances with names like valve 1, valve 2, valve 3 et cetera (while default input 'Gr {0}' would lead to instance names like Gr 1, Gr 2, Gr 3 et cetera).
- **Input field 'start number'**
Beware of entering a wrong start number! Enter 1 if no instances of the control type yet exist. If other instances do exist, view all instances of the concerning control type, find the instance with the highest number and enter a start number higher than that.
- **Input field 'interval'**
Enter 1
- **Input field 'count'**
Enter the number of instances you want to add

6.2.2 How to remove control instances

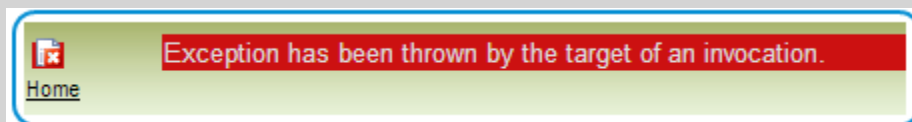
Valve small field 25	(1)	1e5094e4-8001-4ef0-9cff-657e718293f3	Irrigation Valve
Valve water tank 26		7c48a981-0043-42b1-8750-de1a899579e1	Irrigation Valve

(2) delete

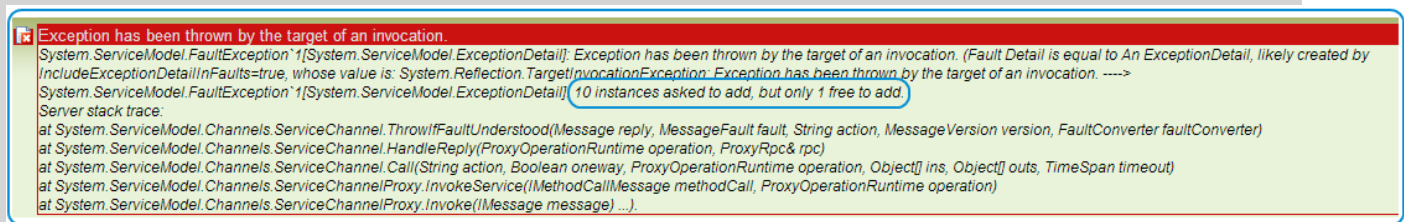
1. In the report of existing control instances (lower part of the screen), select the control instance you want to remove by clicking on it; (1)
2. Click on the 'delete' button below the existing control instances report. (2)

Note

If you add to more control instances then is allowed in your license, such as number of irrigation pump, a notification will pop up.



If you click on the icon above 'Home' you will get an excerpt of what went wrong. For example, you can find in the message that a number of 10 irrigation pumps was added when the license is just for 1 irrigation pump.

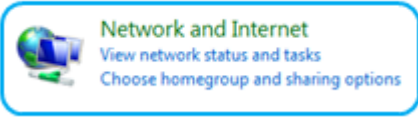
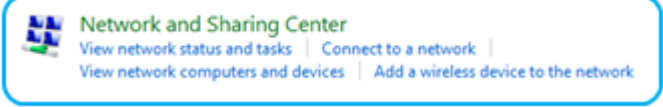
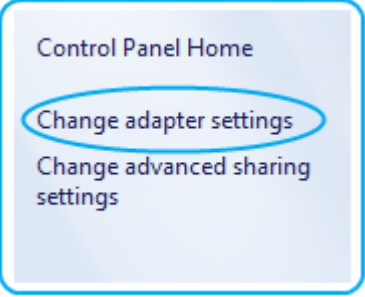
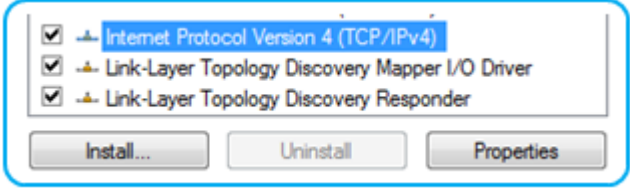


When all is set correctly, click the 'add' button and the newly added control instances will appear in the report of existing control instances (lower part of the screen).

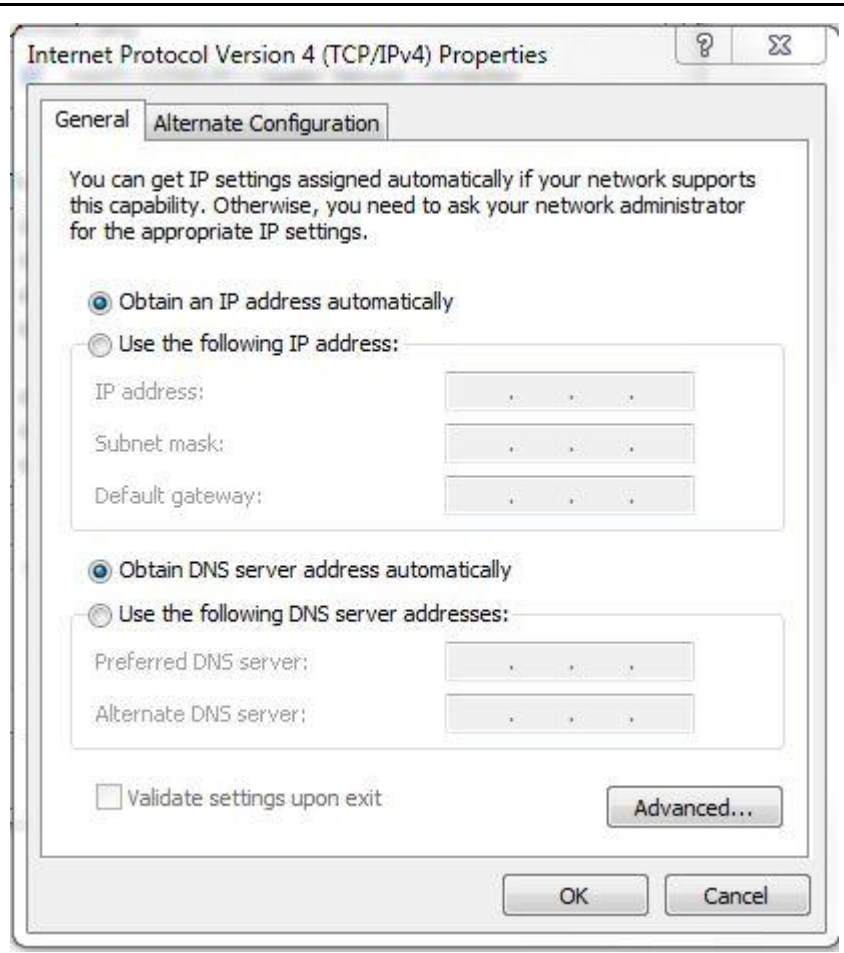
6.3 Configure network

Before you configure your greenbox, you need to change the network settings on your laptop that you have previously changed in the "[Quick Start](#)" chapter "[Step 2: Preparation](#)".

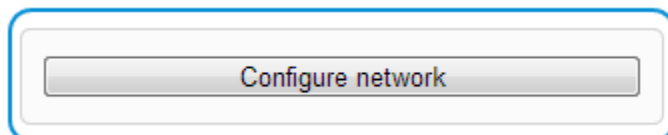
6.3.1.1 How to change network settings step by step

A. Go to your Control Panel via the 'windows' button	
B. Go to 'Network and Internet'	
C. Go to 'Network and Sharing Center'	
D. Select in the left menu 'Change adapter settings'	
E. Right-click on the connection you want to use and select 'Properties'	
F. Click on 'Internet Protocol Version 4 (TCP/IPv4)' and select 'Properties'	

G. Select 'Obtain an IP address automatically' and 'Obtain DNS server address automatically'.



When your system needs to be connected to an existing network where IP addresses are different then you need to change that via the 'Configure network' button on the 'Manage' page.



This opens the following options where you can change the settings of your network.

LAN 1:

10.30.3.108	IP address
255.255.0.0	subnet mask
10.30.0.1	default gateway
10.30.1.3	preferred dns
10.30.1.4	alternate dns

☒


If you want to save your changes, click the button



If you want to cancel or close the options, click the button



NOTE

Only change the settings when there is no other option. Always consult your dealer first when you want/need to do that. Changing the network settings could have consequences for the operation of this system or another system. For example, there will be conflicting issues when the IP address is changed to the same IP address of another greenbox.

6.4 Update page

Click on the icon below or scan the QR code to view the supporting video



After you have clicked on 'Open update page', it opens the update page as shown below. Here you can view all updates that are installed and update the system via USB stick. How to update the iSii aqua compact via USB stick, you can view in our instructional video.

[Home](#)

update service configuration

choose the update server to use

☒ download and install updates automatically on the specified time.
☐ download updates automatically, but install them manually.
☐ don't download and install updates automatically.

choose the update server to use

☐ default update server.
test.update.yagni.biz

☒ custom update server:

automatic download time
3:00 AM

manual restore result:

update location/drive
c:\

select update location and install

restore last installed update manually search for updates save configuration

updates installed

Update State	Version Number	Description	Installation Date Time	Download Progress
Installed	163	G10 - HortiControl_20120	7/25/2012 1:35:25 PM	
Installed	164	G10 - HortiControl_20120	7/25/2012 1:42:25 PM	
Installed	175	G10 - HortiControl_20120	8/2/2012 11:23:53 AM	
Installed	188	G10 - HortiControl_20120	8/9/2012 8:48:02 AM	
Installed	189	G10 - HortiControl_20120	8/9/2012 11:58:26 AM	
Installed	190	G10 - HortiControl_20120	8/10/2012 8:28:37 AM	
Installed	192	G10 - HortiControl_20120	8/14/2012 3:02:48 AM	
Installed	198	G10 - HortiControl_20120	8/16/2012 3:02:45 AM	

1 2 3 4

6.5 Import new license

If you have bought an upgrade or extra controls for the iSii aqua compact, you will receive a new license via Email. This new license needs to be imported.

6.5.1 Step 1

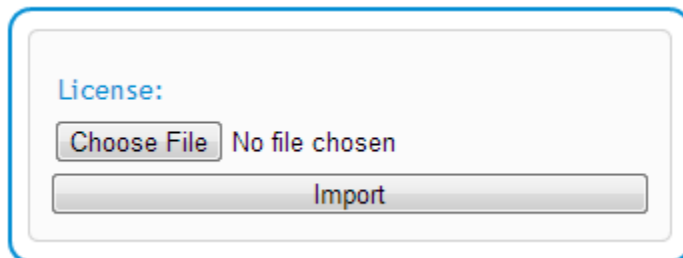
Right click on the file and select 'save as' to save the file to your computer.

6.5.2 Step 2

Go to the 'Manage' tab and click on 'Choose File', select the License file on your computer.

6.5.3 Step 3

Click on the 'Import' button to add your license file to your iSii aqua compact.

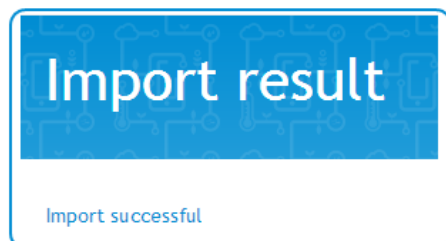
A screenshot of a web interface for importing a license. It features a light gray rounded rectangle with a blue border. Inside, the word "License:" is in blue. Below it is a button labeled "Choose File" and the text "No file chosen". At the bottom is a wide button labeled "Import".

License:

Choose File No file chosen

Import

When your import is successful the page below will appear.



7 How to commission controls

This chapter will describe how to commission the different controls that are available for the iSii aqua compact.

7.1 How to commission an EC control

Introduction

The purpose of the EC control is to establish the right amount of fertilizer in the irrigation water. Based on the deviation of the EC measurement relative to the EC set point, an I-action is calculated and carried out through the actuator.

Before you start with commissioning the EC control, check and make sure that you have set up the EC control.

Adding EC control(s)

For more information view Chapter "to add control instances".

1. Go to the 'Manage' tab
2. Click on 'Open control instances page'
3. Select 'EC control' at control type
4. Type in a control name
5. Click 'add'

Connecting EC control(s)

For more information view Chapter Connect Controls.

1. Go to the 'Connections' tab
2. Select at 'Source' 'Irrigation pump' and pump number or name you want to connect to the EC
3. Select at 'Destination' the EC control (and which pump)
4. Click the 'add' button to add the connection

Coupling EC control to IO channel

For more information view Chapter I/O Connections.

7.1.1 I/O: inputs (Ain)

EC control: measurement (I/O)	0,0	EC
Pump EC temperature: measurement	0,0	°C

Input for the control is the EC measurement. The measurement needs to be compensated for temperature influences, in order to be an accurate measure for the fertilizer concentration.

EC monitor: measurement (I/O)	0,0
-------------------------------	-----

An EC monitor sensor can be installed for safety reasons. This is optional. EC measurement and EC monitor measurement share the same temperature measurement for temperature compensation.

7.1.2 I/O: Digital outputs (Dout)

EC valve closed	-
EC valve open	-

Which digital outputs (Dout) to connect depends on the actuator type. We distinguish two systems:

- **The modulating system**
Properties: an actuation pulse leads to increment (open actuation) or decrement (close actuation) of the fertilizer dosing pace. If actuation stops, the amount of dosed fertilizer remains stable.

In case of a modulating system, both open and closed actuations are needed.

- **The on/off system**
Properties: an actuation pulse (open actuation) directly leads to dosage of a fertilizer shot. If actuation stops, the fertilizer dosing stops as well.

EC control: actuation valve closed 1	-
--------------------------------------	---

This actuation is optional. It can be used to close a valve that prevents any fertilizer leaking when the EC control stops giving fertilizer.

7.1.3 I-action calculation

pump: measurement EC control	0.0	EC
EC PI-control: control factor EC supply	5.00	
EC control: I-action	0.0	%

An EC deviation is calculated by subtracting 'EC control: EC value' from 'pump: measurement EC control'. The EC deviation is calculated and multiplied with the control factor every 10 seconds. The result is added up with 'EC control: I-action'.

7.1.4 I-action realization

EC control: I-action	0.0	%
EC control: type of valve		
EC control: running time modulating valve	0.8	EC

Determine what type of actuator you have. View also paragraph I/O: Digital outputs (Dout).

7.1.5 Modulating system

- Select 'modulating valve' at 'type of valve'
- Correctly fill in 'running time'

The I-action should be interpreted as a valve position. With 'running time' correctly entered, the iSii aqua compact can realize the valve position by activating 'open' or 'close' actuation.

7.1.6 Modulating on-off system

- Select 'on/off – open/close' at 'type of valve'

The I-action should be interpreted as a percentage of the maximum fertilizer dosing pace. The iSii aqua compact can realize the desired dosing pace by varying the frequency of actuation pulses.

7.2 How to commission the Fertilizer Ratio control

Introduction

The purpose of the EC control is to establish the right amount of fertilizer in the irrigation water. Based on the deviation of the EC measurement relative to the EC set point, an I-action is calculated and carried out through the actuator.

For an H.E.Anderson fertilizer injector use the Fertilizer Ratio control to realize the amount of fertilizer.

Before you start with commissioning the Fertilizer Ratio control, check and make sure that you have set up the Fertilizer Ratio control.

It's a good practice to make a backup before you start configuration actions like adding new controls.

7.2.1 Adding Fertilizer Ratio control(s)

For more information view Chapter "Control instances".

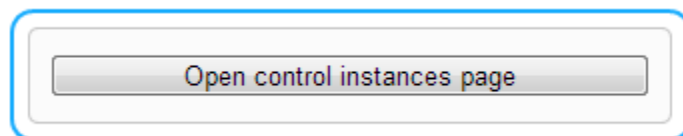


NOTE

A Fertilizer Ratio control can not be used in combination with controls of type "EC control". It's important to remove all EC controls if present, before you add a Fertilizer Ratio control.

7.2.2 Connecting Fertilizer Ratio control(s)

1. Go to the 'Manage' tab
2. Click on 'Open control instances page'



3. If you see in the list of existing controls a control of control type id 'EC control', select it by clicking on the line of that control and next click on the button 'delete'. Only continue with the next steps when all controls of type 'EC control' are removed. You can also view paragraph "Remove control instances".

4. Select 'Fertilizer Ratio' at control type (1)

5. Type in a control name (2)
6. Click 'add' (3)

You can go back to the regular menu by clicking on 'Home'.
You can go back to your normal menu

7.2.3 Connecting Fertilizer Ratio control(s)

For more information view Chapter Connect Controls.

1. Go to the 'Connections' tab
2. Select at Source 'Fertilizer Ratio' instance you want to connect to the irrigation pump (1)
3. Select at Destination the 'Irrigation Pump' (2)
4. Click the 'add' button to add the connection (3)

7.2.4 Coupling Fertilizer Ratio to IO channel

For more information view Chapter I/O Connections.

7.2.5 IO: inputs (Ain)

EC control: measurement (I/O)	0,0	EC
Pump EC temperature: measurement	0,0	°C

Input for the control is the EC measurement. The measurement needs to be compensated for temperature influences, in order to be an accurate measure for the fertilizer concentration.

EC monitor: measurement (I/O)	0,0
-------------------------------	-----

An EC monitor sensor can be installed for safety reasons. This is optional. EC measurement and EC monitor measurement share the same temperature measurement for temperature compensation.

Pump flow	0,0	l/min
-----------	-----	-------

The Fertilizer Ratio control needs the pump flow as input. This is not an I/O parameter in the Fertilizer Ratio itself. The amount of flow is retrieved from the connected Irrigation Pump.

7.2.6 I/O: Digital outputs (Dout)

Fertilizer actuation on	☐
-------------------------	--------------------------

This output is to add fertilizer to the water. For more information how this is used, consult the user manual.

EC control: actuation valve closed 1	☐
--------------------------------------	--------------------------

This actuation is optional. It can be used to close a valve that prevents any fertilizer leaking when the control stops giving fertilizer.

Fertilizer released	☐
---------------------	--------------------------

This flag is set by the control. When it's set it means that the Fertilizer Ratio is well configured and the control wants to give fertilizer. The flag will be removed when it's not allowed to give fertilizer for example when the pump is paused for an alarm.

When the flag is not set, the actuation valve will be actuated to close and the Fertilizer actuation on is blocked.

7.3 Weather station - optional

When you have bought the All-in-one weather station via our webstore you need to set up and connect it to the iSii aqua compact.

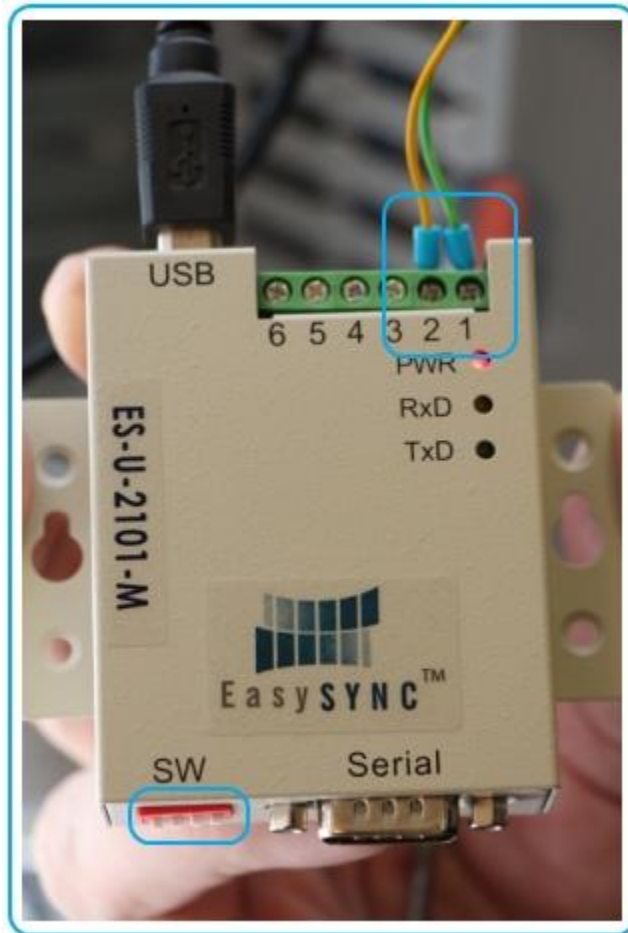
7.3.1 Weather station package

The All-in-one weather station comes with:

- 15 meters connection cable



- USB - RS 485 converter;



- 24V DC Power Supply

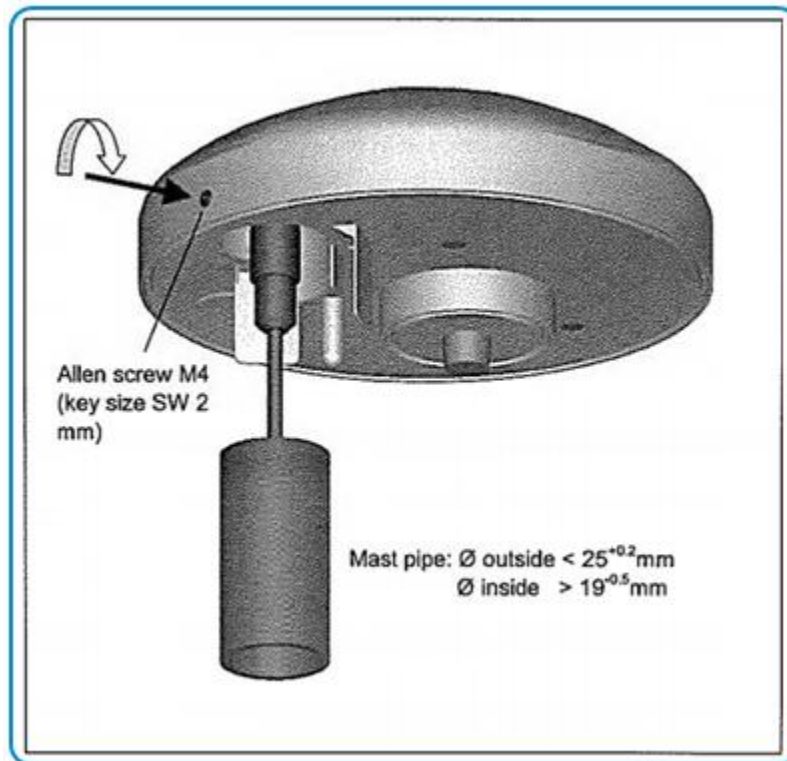


- USB connection cable



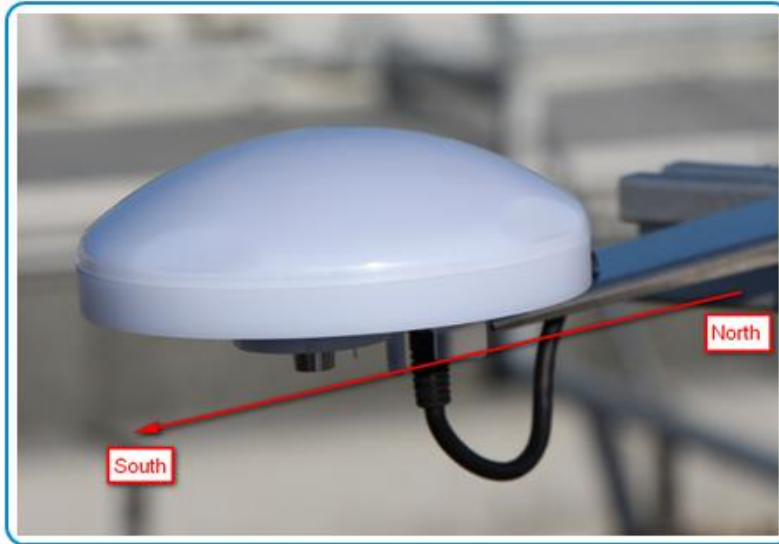
7.3.2 Step by step installation

1. Run the cable through the mast pipe
 2. Insert and secure the connector
 3. The mast pipe can now be inserted in the weather station
- Secure the pipe socket with the Allen screw.

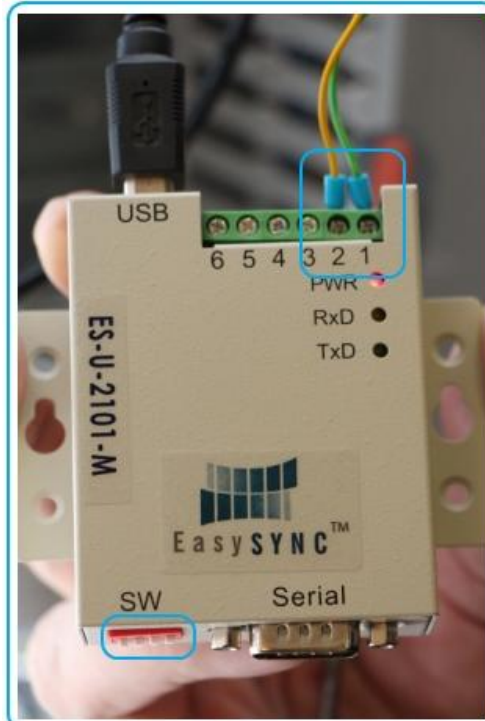


The All-in-one weatherstation had to be aligned to north for accurate measurement of winds direction and brightness. The Allen screw acts as the marker for north.

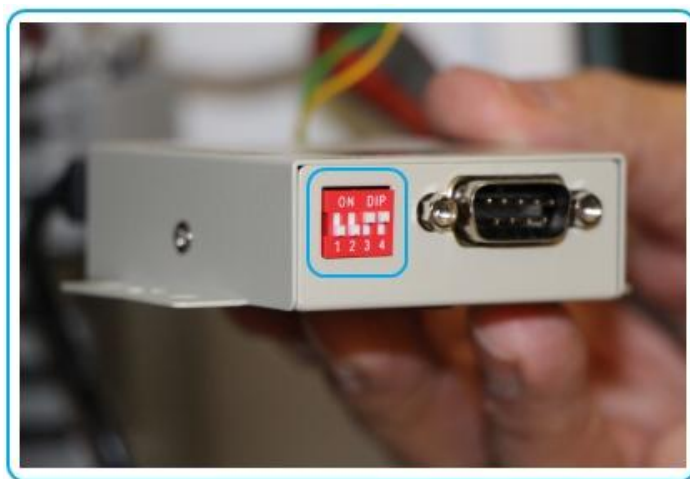
For alignment to north, select a conspicuous feature of the landscape with a compass and use this to align the marking north on the device. When using a compass for alignment to north make sure you take account of the magnetic variation due to interference from magnetic fields caused by iron parts or electric cables.



4. Connect the yellow and green cores to the USB /485 convertor and also connect the

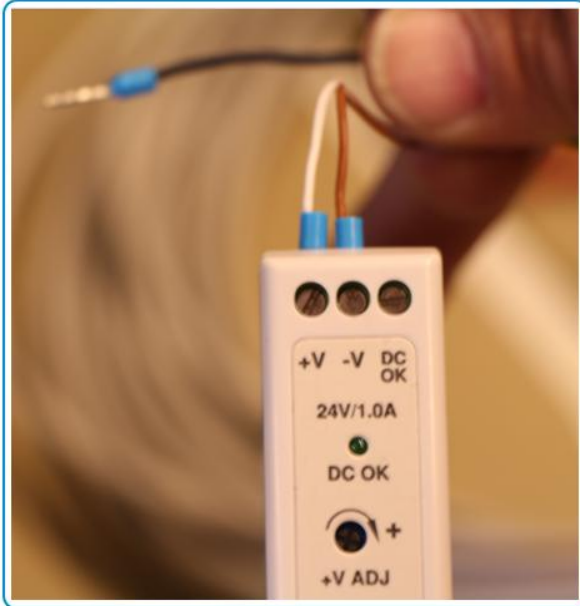


serial cable.
Make also sure that the dip switchers are in the correct position.



5. Connect white (+) and brown (-) to the 24V DC power supply and the shield to ground of the panel. Don't use the greenpoint power supply for this but the included IO power

supply.



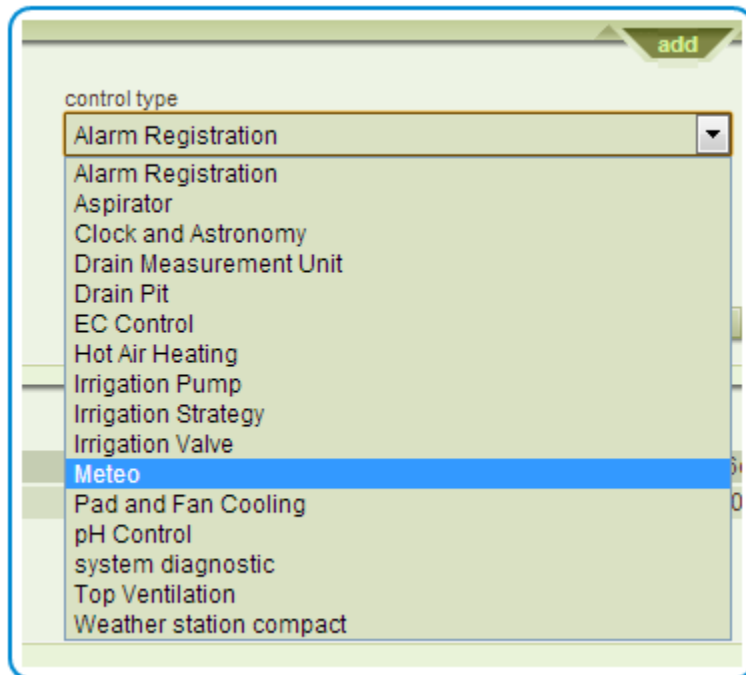
6. Connect to other end of the USB connection cable to the USB port of the greenbox.



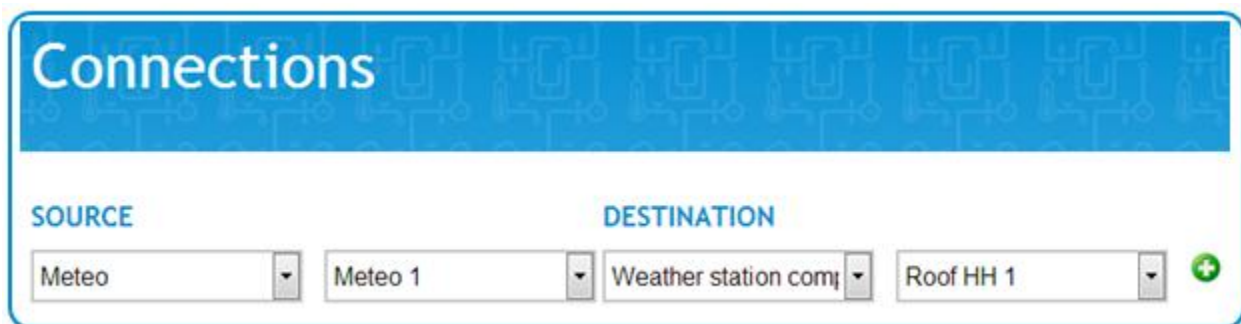
7.3.3 Set up the control

1. Open the control instances page via the manage page.

2. Add control types 'Meteo' and 'Weather station compact'.



3. Connect the 'Meteo' control to the 'Weather station compact' control.



4. Check in the Controls tab if All-in-one weather station data appears and is being refreshed (main loop cycles per second for instance).

Controls

CONTROL TYPE

Weather station compact

CONTROL INSTANCE

Roof HH 1

Name	Value	Unit
Absolute air pressure	1004.60	hPa
Absolute humidity	3.5	g/m ³
Brightness east	36.7	kLux
Brightness north	17.8	kLux
Brightness south	36.1	kLux
Brightness west	23.1	kLux
Date and time	3/29/2013 9:15 AM	
Dew point temperature	-4.2	°C

5. The data in the 'Meteo' control should be in sync with the 'weather station compact' control.

Controls

CONTROL TYPE

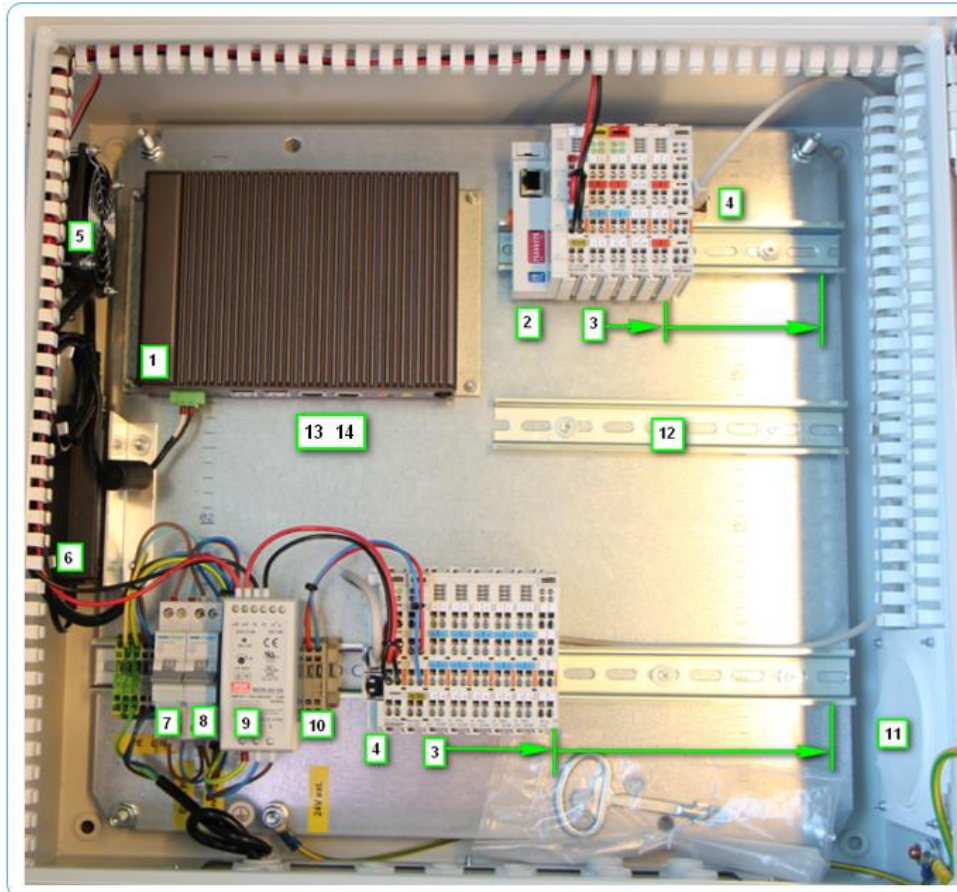
Meteo

CONTROL INSTANCE

Meteo 1

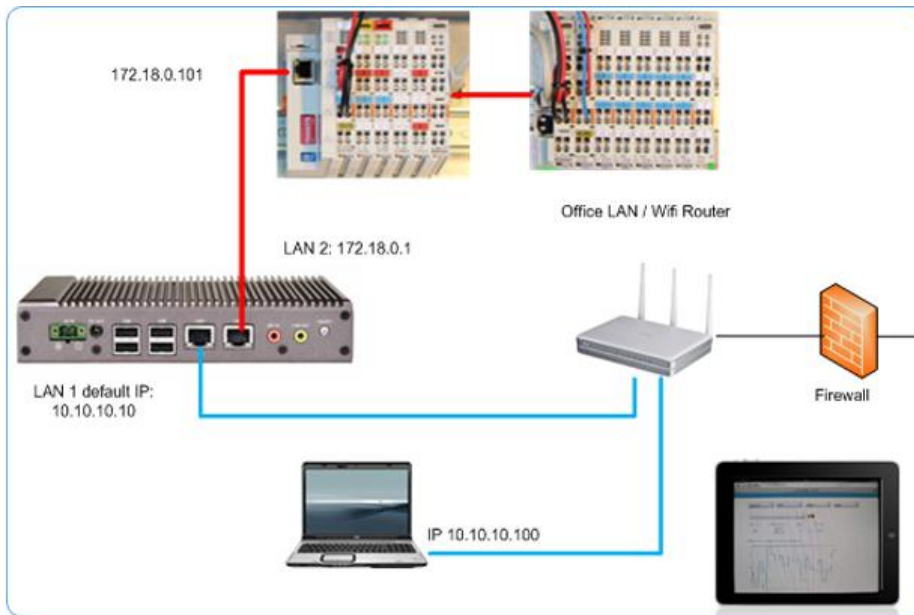
Name	Value	Unit
outside temperature measurement	3.0	°C
outside temperature measurement (I/O)	3.0	°C
radiation measurement	409	W/m ²
radiation measurement (I/O)	401	W/m ²
radiation sum measurement	293	J/cm ²
rain	☐	
rain sensor measurement	☐	
wind direction measurement	north	
wind direction measurement (I/O)	0.0	°

8 System lay-out



1	Industrial embedded PC	9	24DC (60 W) Power Supply cooling fan and Greenpoint
2	Ethernet TCP Modbus buscoupler		
3	Greenpoint (part 1 and 2 + expansion space)	10	External power supply connection point for control actuations
4	K- bus extension kit	11	Cooling inlet, with air filter
5	Cooling fan	12	Din rail for; Greenpoint expansion / transmitter or power supply
6	Power adapter for PC		
7	Circuit breaker for PC	13	LAN 1 (office network)
8	Circuit breaker for Greenpoint and cooling fan	14	LAN 2 (I/O network)

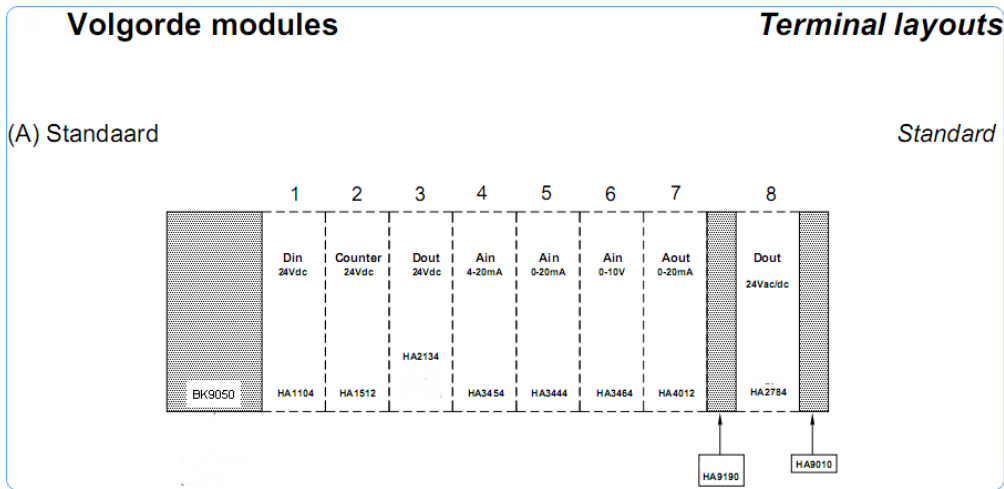
9 Network Architecture



	Default IP address
LAN 1 IP	10.10.10.10 / 255.255.0.0 *
LAN 2 IP	172.18.0.1 / 255.255.0.0
Greenpoint IP	172.18.0.101 / 255.255.0.0

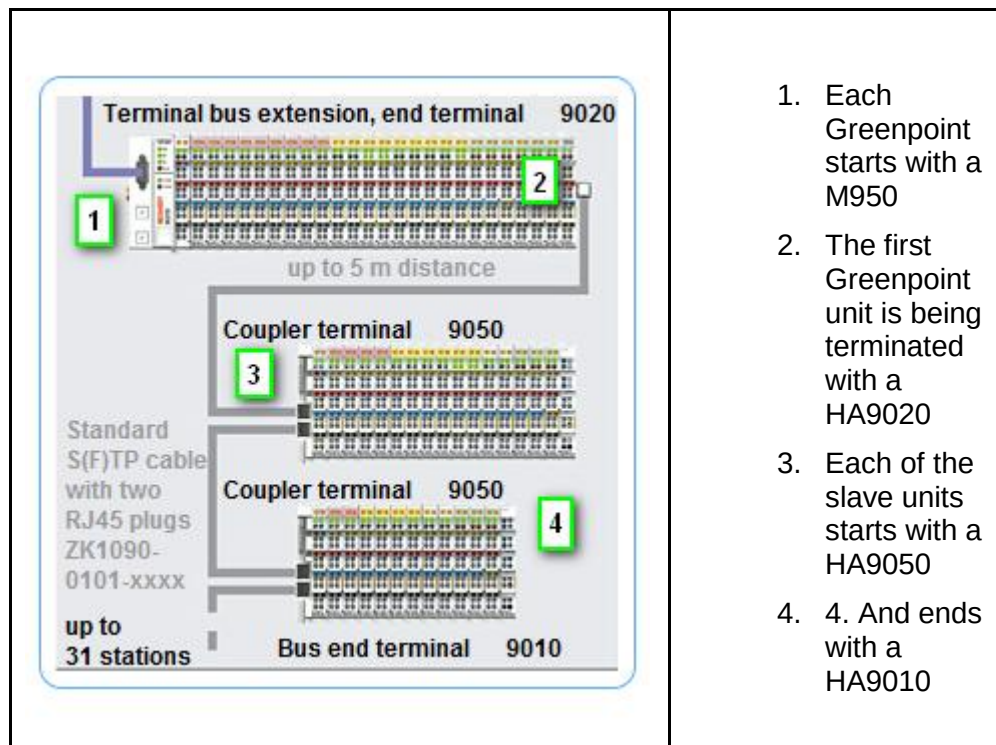
The LAN 1 IP address may be altered to the IP address range of the local network. In order to be able to operate the system it has to be a fixed IP address.

10 Greenpoint terminal layout (basic version)



11 Appendix 1

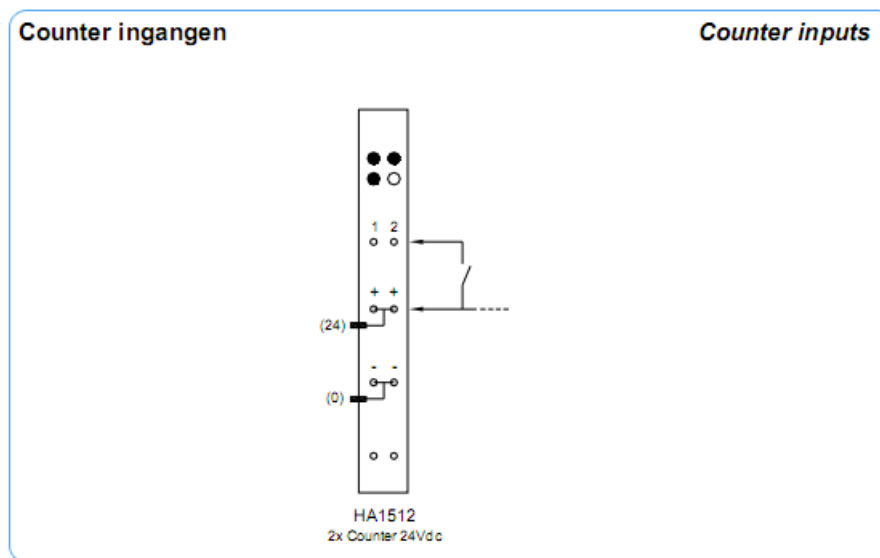
11.1 Extended version



12 Appendix 2

In this appendix you will find I/O Modules.

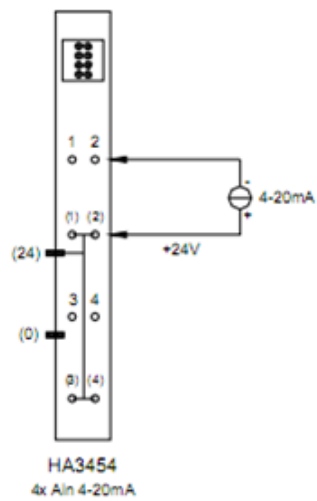
12.1 Counter inputs HA1512



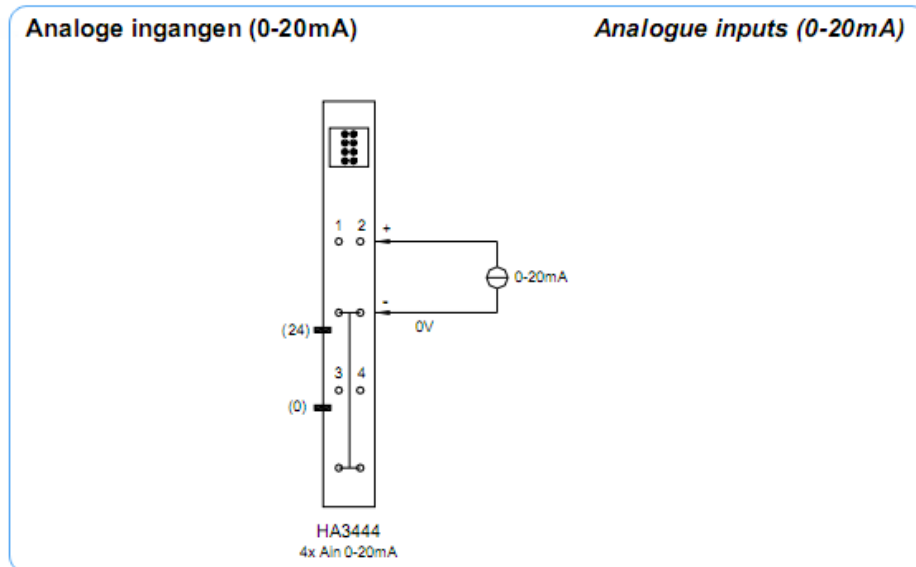
12.2 Analog inputs_4-20ma HA3454

Analoge ingangen (4-20mA)

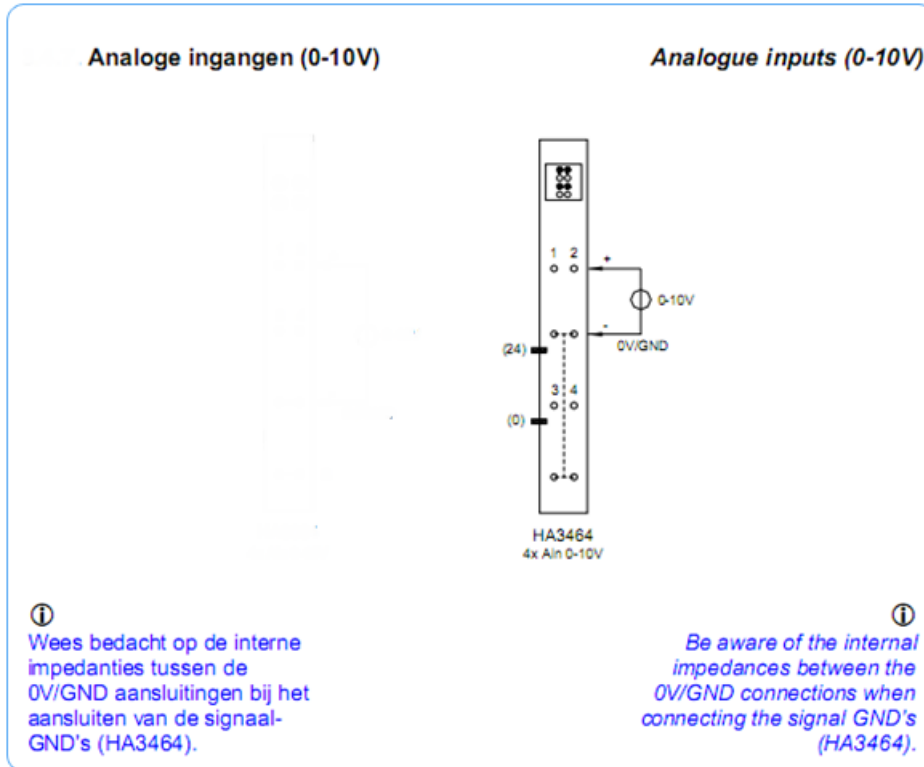
Analogue inputs (4-20mA)



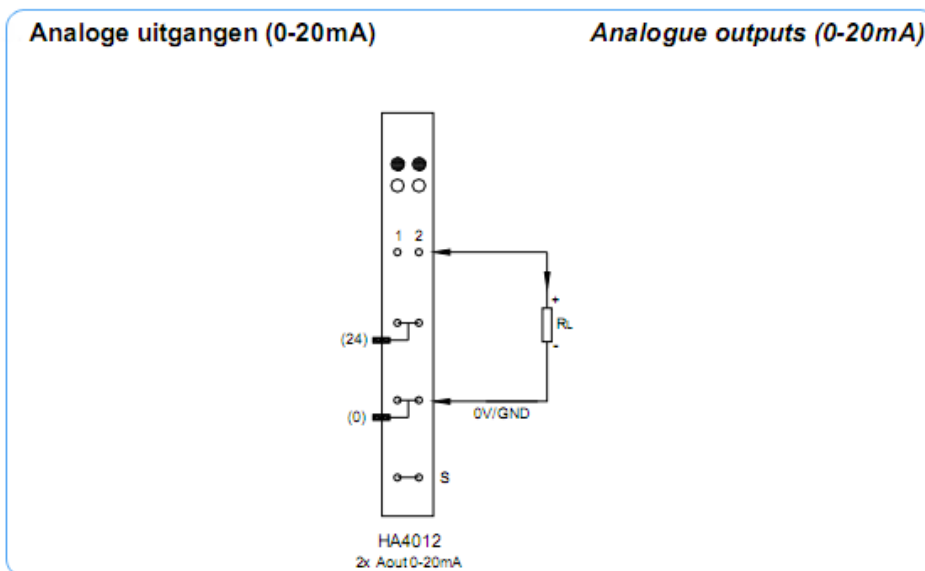
12.3 Analog inputs 0-20ma HA3444



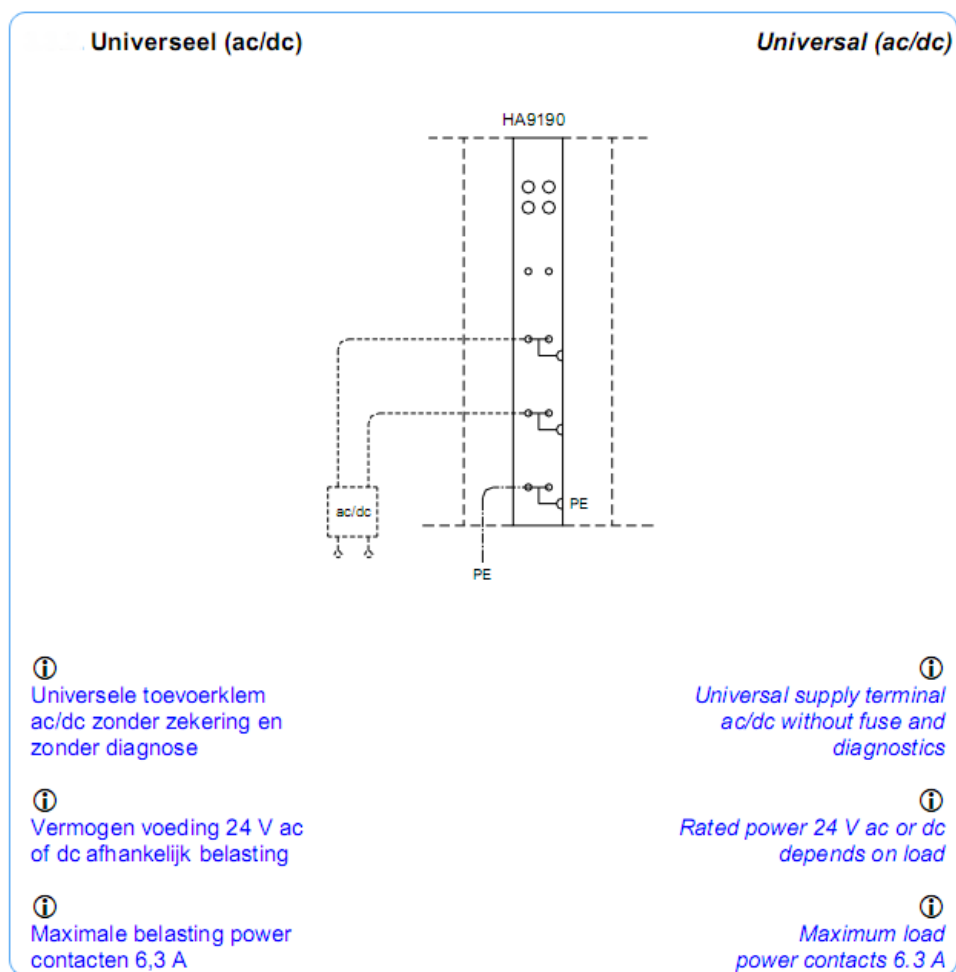
12.4 Analog inputs 0-10V HA3464



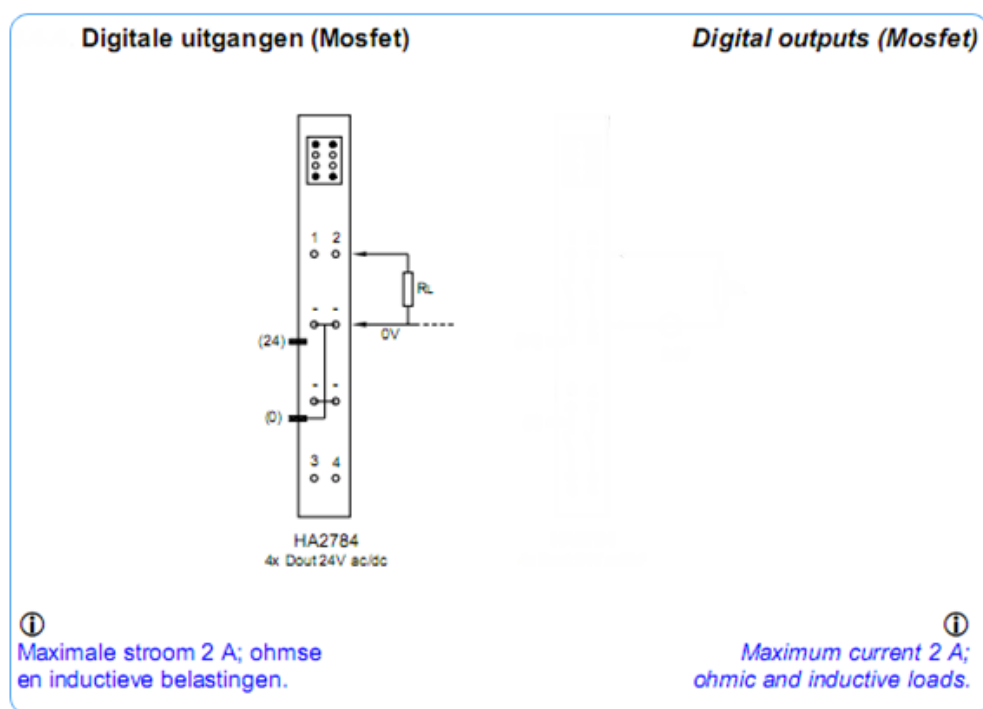
12.5 Analog Outputs 0-20mA HA4012



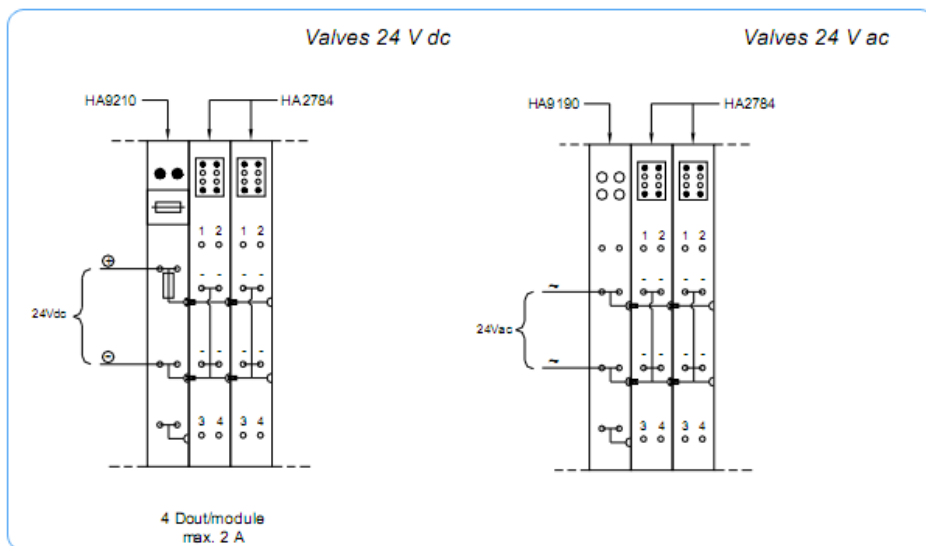
12.6 Universal AC/DC (HA9190)



12.7 Digital outputs mosfet HA2784



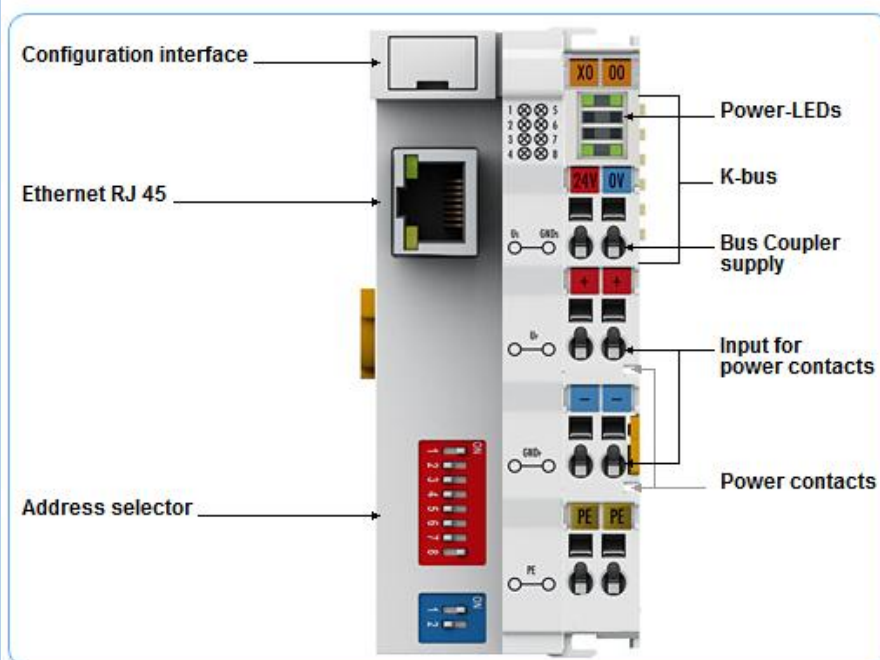
12.8 Valves



Each AC solenoid valve has to be equipped with a varistor

Each DC solenoid valve has to be equipped with a diode

12.9 M950



M950

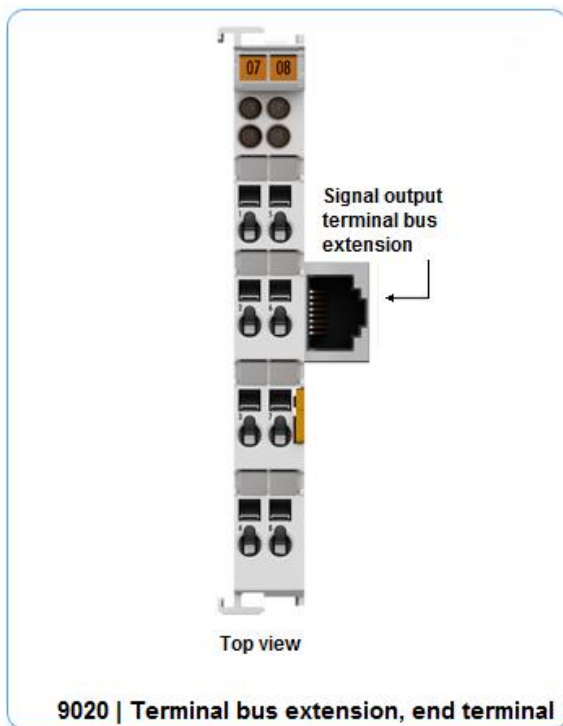
The address on the Buscoupler M950 is set to 101 (172.18.0.101)



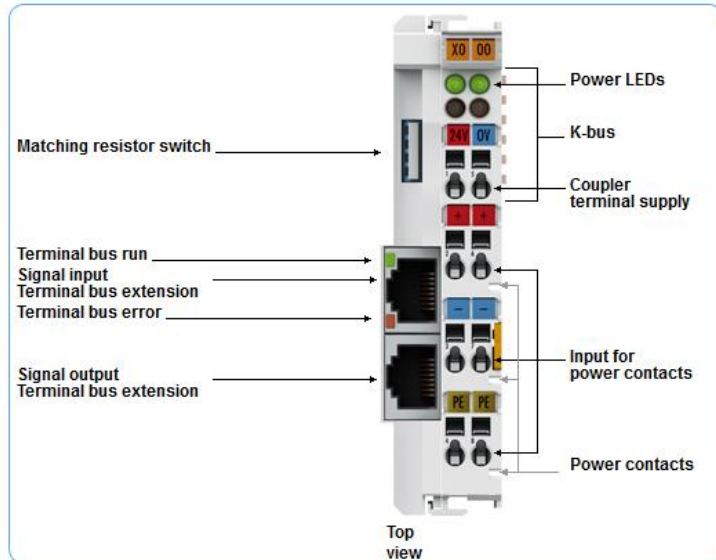
NOTE
Address switches on-off-on-off-off-on-on-off (101)

12.10 Extension kit

12.10.1 HA9020

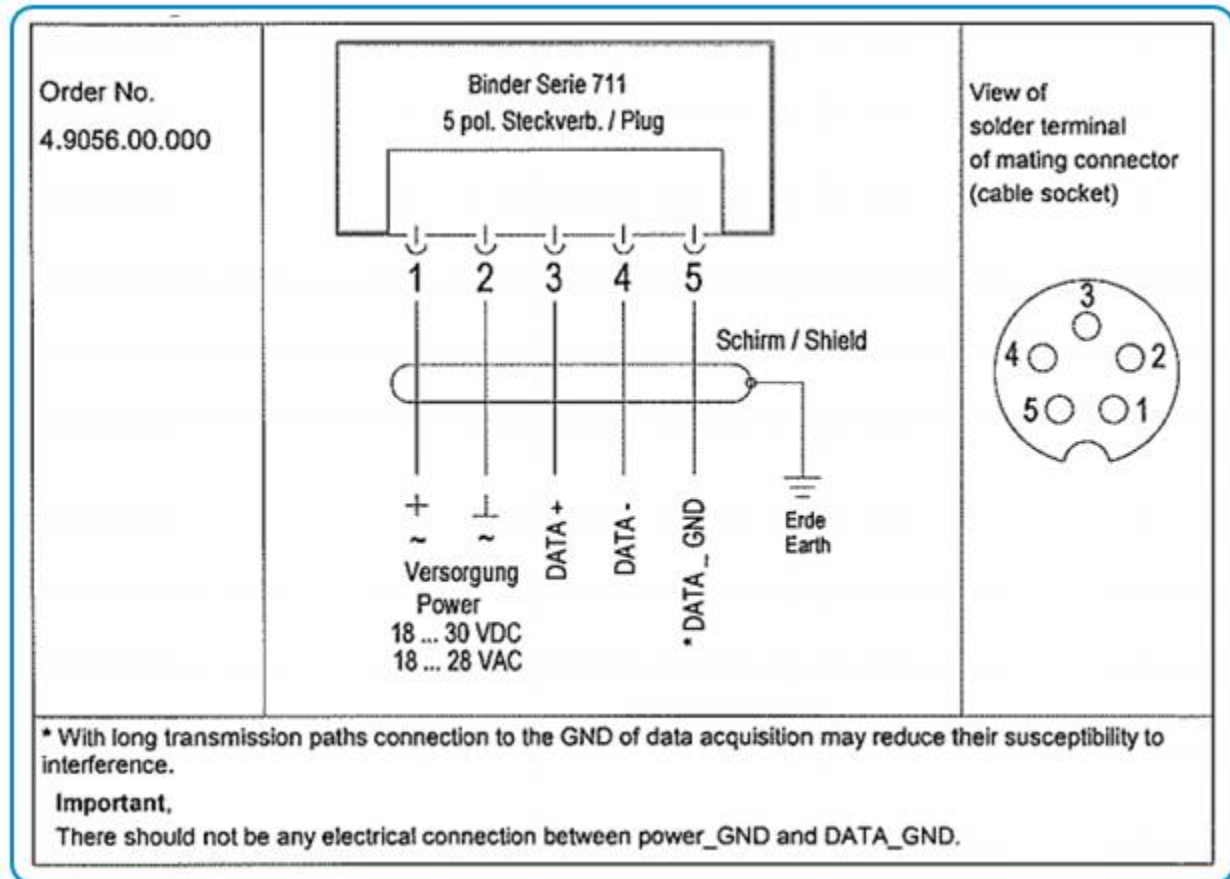


12.10.2 HA9050



Terminal bus extension, coupler terminal

12.11 Weather station - diagram of connections



12.11.1 Connection supplied cable

Core colour	Function
WHITE	+ power 18...30 V DC / 18...28 V AC
BROWN	- power 18...30 V DC / 18...28 V AC
BLACK	DATA +
BLUE	DATA -
GREY	* DATA _ GND

* With long transmission paths connection to the GND of data acquisition may reduce their susceptibility to interference.

Important,
There should not be any electrical connection between power_GND and DATA_GND.

12.11.2 Extending connection cable

If the supplied connection cable isn't long enough the cable can be extended by using a shielded 2x2x 0,8 mm² twisted pair cable. The maximum length from the All-in-one weather station to the Greenbox-aqua 01 system is 100 meters.

12.11.3 USB connection cable



